

Topics for Exam 1

- **Groundrules**
 - No computers, tablets, cell phones...
 - Open book, notes, homework solutions (paper only – no electronic access).
 - No non-class-provided materials
- **Chapter 0: Math Fundamentals**
 - (p.3-7) Sets, Sequences, and Tuples
 - (p. 7-13) Functions, Relations, and Graphs
 - (p. 13-14) Strings and Languages
 - (p.17-24) Types of proofs
- **Chap. 1.1 Finite Automata**
 - (p.31-40) Formal definition of DFA
 - (p. 40) Formal definition of a computation
 - (p. 41-43) Formal definition of language recognition
 - Designing finite automata from description or language
 - (p. 44-47) Regular operations over sets, inc. closure
- **Chap. 1.2 NFA**
 - (p. 53) Formal definition
 - ϵ rules and Nondeterministic computation
 - (p.55-58) Converting NFAs into DFAs
 - (p. 59-63) Proving closure under union, concatenation, and star via construction of DFA from NFA
- **Chap. 1.3 Formal definitions of Regular Expressions**
 - (p. 63-66) Formal definition
 - (p.66-67) Match between DFAs and regular languages
 - (p.73) Formal Definition of GNFA
 - (p.73-76) Conversion of Regular Expression to DFA and vice versa
- **Chap. 1.4 Nonregular Languages**
 - (p.77-79) Pumping Lemma